

5) Find the value of:

$$\lim_{n \rightarrow 1} \frac{1-n^{1/3}}{1-n^{2/3}} \quad \text{ii) } \lim_{n \rightarrow 0} \frac{\sqrt{1+n} - \sqrt{1-n}}{n}$$

Q8) a) Find the derivative of:

$$(i) \log n \quad (ii) \tan^{-1} n$$

b) Integrate

$$(i) n^3 + \tan n + e^{\tan n} \quad (ii) \sin^{-1} n + \cos n + 1$$

Q9) a) Simplify:

$$P + \{ [P * (P+q)] + (q+r) \}$$

b) Simplify

$$(P+q)' * (q+r)$$

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$$\frac{(P+q) * (q+r)}{n(\sqrt{1+n} - \sqrt{1-n})}$$

$$\frac{1+n-1-n}{n(\sqrt{1+n} - \sqrt{1-n})}$$

$$P * \{ P, (P+q) \}$$